

Date: Wed, 9 Jun 93 02:39:56 PDT
From: Packet-Radio Mailing List and Newsgroup <packet-radio@ucsd.edu>
Errors-To: Packet-Radio-Errors@UCSD.Edu
Reply-To: Packet-Radio@UCSD.Edu
Precedence: Bulk
Subject: Packet-Radio Digest V93 #160
To: packet-radio

Packet-Radio Digest Wed, 9 Jun 93 Volume 93 : Issue 160

Today's Topics:

 IP Addresses (2 msgs)
 Mickey Mouse
 MiniSport Laptop Hacker - Vol 4
 MiniSport Laptop Hacker - Vol 5
 MiniSport Laptop Hacker - Vol 6
 MiniSport Laptop Hacker - Vol 6A
 Packet HIGH SPEED HELP!
 PK-232 DCD open squelch mod wanted
 Soundblaster as modem? (3 msgs)
 test

Send Replies or notes for publication to: <Packet-Radio@UCSD.Edu>
Send subscription requests to: <Packet-Radio-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Packet-Radio Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/packet-radio".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 8 Jun 93 17:53:47 GMT
From: pravda.sdsc.edu!news.cerf.net!usc!howland.reston.ans.net!ux1.cso.uiuc.edu!
uwm.edu!logicse!psgrain!ee.und.ac.za!hippo.ru.ac.za!ucthpx!comgate.ee.uct.ac.za!
crawford@network.UCSD.EDU
Subject: IP Addresses
To: packet-radio@ucsd.edu

How does one apply for an amateur IP address (for a gateway)?

Thanks.

Brian Crawford KL7JDQ/ZS1 Phone: +27 21 650 3467/Fax: 3465 /-----_

Dept. Electrical Engineering Email: crawford@eleceng.uct.ac.za <__>
Private Bag, Rondebosch 7700, crawford@comgate.ee.uct.ac.za \ /
South Africa ' * - '

Date: 9 Jun 93 09:58:00 GMT
From: [sdd.hp.com!swrinde!emory!logicse!psgrain!ee.und.ac.za!hippo.ru.ac.za!ucthpx!
comgate.ee.uct.ac.za!not-for-mail@network.UCSD.EDU](mailto:sdd.hp.com!swrinde!emory!logicse!psgrain!ee.und.ac.za!hippo.ru.ac.za!ucthpx!comgate.ee.uct.ac.za!not-for-mail@network.UCSD.EDU)
Subject: IP Addresses
To: packet-radio@ucsd.edu

Where do I get a 44.* IP address from?

Thanks.

Brian Crawford KL7JDQ/ZS1 Phone: +27 21 650 3467/Fax: 3465 /-----_
University of Cape Town Email: crawford@eleceng.uct.ac.za <__>
Dept. Electrical Engineering crawford@comgate.ee.uct.ac.za _/_/
Rondebosch 7700, South Africa *-'

Date: Tue, 08 Jun 93 22:31:18 +1200
From: usc!wupost!waikato.ac.nz!aukuni.ac.nz!nacjack!codewks!carl@network.UCSD.EDU
Subject: Mickey Mouse
To: ~~packet-radio@ucsd.edu~~

[illegible]

- M I C K E Y M O U S E -

The BBS Works -- +64 9 630 7739 NZL New Zealand's Oldest BBS

Date: 8 Jun 93 17:20:27 GMT
From: olivea!isc-br!tau-ceti!comtch!opus-ovh!bmork@decwrl.dec.com
Subject: MiniSport Laptop Hacker - Vol 4
To: packet-radio@ucsd.edu

MiniSport Laptop Hacker - Vol 4

28 Nov 92

A few more folks checked in since the last issue. It was good to hear from KI6PL, N8OWM, N8PJP, KU8H. These volumes come out pretty spuratically. That's why they're labelled Volumes rather than Parts. Each is put out on the network as I have info to fill it. Be sure to send me *your* information! The rumor mill suggests a large pool of these machines is becoming available in the Michigan area at reasonable prices. That should provide a much bigger pool of users to swap information. Good!

One of the best purchases I've made recently is a CD-ROM. I survive with one Ham radio related disk and one shareware distribution disk. Any of the programs I refer to are likely sourced by these two CD-ROMs. I would love to share them with you, and it's encouraged by the program authors. Make it painless for me (disk SASE, clear request, etc) and I'll make copies for you. If you're a "want it now" type of person, we can do a phone data transfer.

>>> FLOPPY DISK SOURCE The strange 2" floppy disks problem seems to be a perennial concern. Here's all the non-rumor info I have. Rex Television Service Co (7030 W. 111th Street, Worth, IL 60482-1827) sells a 10cnt box for \$45.00, but then tacks on another \$10 for freight. They also tried to get me for sales tax, but refunded it later. Phone 708-448-5558. The box I have indicates a lifetime warantee from FUJI, with the following Point of Contact: Fuji Photo Film USA, Inc., 555 Taxter Rd, Elmsford, NY 10523.

>>> FILE TRANSFERS I found COMMO and DSZ will work together on the MiniSport for what I need in less space than PROCOMM takes. This allows packet (or modem comm) with ZMODEM, YMODEM, and XMODEM protocols. I tried using DSZ with a hardwire between computers, using a null modem cable (FWL, which is on your disk C:, is faster. Don't ask why I do these things!). DSZ did not like the 3-wire null cable I described in MLH Vol3 that works with FWL. It needed to "hear" the CD (Carrier Detect) on the serial port. Trying to stay as globally portable as possible, here's a full blown null modem cable that lets you plug into almost any IBM/PC/XT/AT/'286/'386/'486/? that you may come across.

{9fem}-----4' 7cond cable-----({9fem}----- 5" 7cond cable----{25male})

0 (0 1) DB-25 Frame Ground is not used
1-6 (1-6 8-6) Each feeds it's received DSR into CD, also
2-(3-2) Data to loner
3-(2-3) Data from loner

4-(6-6)	DTR from loner goes to others' DSR
5-(5-7)	Signal Ground
6-(4-20)	DSR to loner from others' DTR
7-(8-5)	RTS from loner to others' CTS
8-(7-4)	CTS to loner from others' RTS
9 (9 22)	Ring Indicator not used

The numbers to the left are pin numbers. Wires are represented by "-". In the text description, "loner" refers to the computer at the lone connector end.

DSZ supports much more widely-known protocols. For that reason, it has been important for me to get running. It's still in an evaluation stage at this QTH. If you have any experience with this program, I'd be interested. But be assured that Zenith did you well by providing FWL. It is an order of magnitude faster for local hard-line transfers. I've not tested FWL over the phone line.

SWAPPING THE SECOND MEGABYTE

I had two MiniSports. The 2M one had a power supply problem. It would work work for a week or so and then no longer power up. Each time, I took it apart, wiggled all the connectors, put it back together and it worked. The fourth time around I decided "enough!" I unsoldered the single-inline-pins of the add-in memory package (8 bits by 1 Mbyte). I resoldered into the same position in a second machine that was working reliably as a 1M system. The memory package's pins are not actually the pins of the ICs, so I wasn't too worried about heat damage. I used an alligator clip between the soldering iron and the computer ground. No jumpers, solder traces, etc needed to be modified. I reran the SETUP option (hold ESC on power up), specified new memory sizes in both, and, voila!, they both have worked fine now. I'm still waiting for the old 2M to fail again.

If you have any supply information on 1Mbyte x 8bit SIP (or SIMMs, I'll add the pins), please let me know! I'm confident that I and other hams can successfully double the memory in a 1Mbyte version of the MiniSport.

Next time, DISASSEMBLY INSTRUCTIONS, POWER SUPPLY PINOUT, MINIMUM BOOT FILES, and discussion of BOARD REVISIONS.

73, Brian, ka9snf@wb7nnf, #spokn.wa.usa or Internet ka9snf@jupiter.spk.wa.us

Brian Mork	Internet bmork@opus-ovh.spk.wa.us
.. . . .	Amateur Radio ka9snf@wb7nnf.#spokn.wa.usa
. . . .	USMail 6006-B Eaker, Fairchild, WA 99011

Date: 8 Jun 93 17:19:31 GMT
From: olivea!isc-br!tau-ceti!comtch!opus-ovh!bmork@decwrl.dec.com
Subject: MiniSport Laptop Hacker - Vol 5
To: packet-radio@ucsd.edu

MiniSport Laptop Hacker - Vol 5, 3 Dec 1992

Yea! I've gotten a few more technical responses from the audience. I'm never sure what people are most interested in. Usually a discontinued, but useful computer attracts a cadre of hackers to support it. I initiated this series in an effort to provide a single point resource point. Keep sending the tech info!

On the flip side, I'll bet there are a lot of first-time MS-DOS users who have purchased this machine because of its "out of production" cost. Let me know what information you need to make this thing useful in your Amateur Radio quests. Owning it is only half the battle. Be sure to **use** it to its full potential.

>>>DISASSEMBLY INSTRUCTIONS Remove the battery. If you'll do more than remove the back panel, I suggest removing the Li batteries, too. If you remove the main battery pack and the Li batteries, you'll lose all RamDisk info and configuration info. Back it up first!

There are 12 phillips screws holding the back of the computer in place. Remove the 5 around the perimeter of the bottom. Notice that one rubber foot has no screw. So as to not snap plastic, remove the 2 screws holding the modem cover in place. Remove the modem cover. Loosen the 4 screws holding the handle of the computer. I leave these in place as the back panel is lifted off. Lastly, don't forget the single screw on the back panel (not bottom). It is the one farthest from the flip down access panel on the back.

Once all 12 screws have been loosened or removed, lift the back cover straight up. The oval Li battery cover will remain in place. There's a plastic insulating sheet attached to the inside of the bottom cover. Be sure not to dislodge or crease it as you lay the back cover aside.

Another dozen screws allows the circuit board to come up. For reference, lay the computer upside down with its back toward you. Remove the 3 screws across the top (the front edge as it lays). The two metal brackets on each side are held down by two screws each. Remove these 4 screws, as you notice the orientation of the metal brackets. Right in the center, there is a single screw holding down a grounding tab. Remove the 1 screw, and the tab if it appears to be loose. The next 3 screws are **inside** of the flip down accessory panel on the back. They're tiny. Don't lose them! The last screw actually is one of four that mount the disk drive in place. It must be taken out to loosen the silver and copper colored grounding straps that curl up around the right side of the circuit board between the power switch and the disk drive.

Disconnect the ribbon cable that overlays the copper colored foil you just loosened. *Carefully* note how the power switch, the ribbon, cable, the ferrite choke (if present), and the disk drive are arranged. This is the most difficult part to get alligned correctly during reassembly.

As you lift the lower right side, depress the power switch so you don't break it off! The eject button of the disk drive also needs to be pressed in as it passes past the thin plastic strip of the computer case blocking its path. The power switch and disk eject button need to be caressed during reassembly, too, simultaneous with holding the ribbon cable and ferrite choke on the cable in place. Do you have three hands?!

While rotating the entire board a little clock-wise (to release the plastic clip extending out from the battery enclosure), lift the left and front upward. The circuit board and the keyboard will be free. The keyboard must be lifted out at the same time or the green acetate ribbons curling around the left side of the circuit board will be strained. *Although the keyboard and the circuit board are not connected, they must be handled as one unit while the acetate ribbon cables are connected*

As you lift out the keyboard/circuit board pair, you'll find they're still connected to the rest of the computer on the back (bottom as you look at it). I find it convenient to open them like a clamshell and set the computer on its side. It stands up all by itself like a birthday card.

>>>POWER PINOUTS

More info on disassembly next time if folks are interested. For now, back up to when you just pulled the back panel off.

Just below the center circuit board hold-down screw, there is a double row of 8 pins (bottom view of a 16pin mini Scotch flex connector header). Pin 1 is toward the right and front of the computer. As you look at it:

15	13	11	9	7	5	3	1		1	2
16	14	12	10	8	6	4	2	or rotate CCW:	3	4

5 6

A working power supply provides the following voltages:

7 8

9 10

11 12

13 14

15 16

1: 5.1	2: 5.1
3: 0.0	4: 5.1
5: 5.1	6: -22.1
7: 10.3	8: -10.4
9: 0.0	10: 6.6
11: 0.0	12: 5.1
13: 0.0	14: 0.0
15: 5.1	16: 5.1

When my system quit working, it consistently failed with the following indications:

pin 5: 0.0

pin 6: 3.9

pin 10: 5.7

Well, I have gone way over my self-imposed one page length! Oh, by the way, if you're looking for an excellent "cram it all onto paper" utility that lets you document packet work, consider tcols, distributed with the shareware A86 assembler. I'm currently evaluating version 3.21 (off of CDRom, available to you, as indicated in MLH Vol4). Tcols appears to be a unix clone, accepting parameters of line width, length, number of columns, etc. I run my printer at 160 characters per line (12cpi condensed) and pack in 8 lines per inch. That's how I archive all the good info you folks send me.

Next time, MINIMUM BOOT FILES, BOARD REVISIONS, and more DISASSEMBLY and PINOUTS.

73, Brian, ka9snf@wb7nnf.#spokn.wa.usa or Internet ka9snf@jupiter.spk.wa

Brian Mork Internet bmork@opus-ovh.spk.wa.us
.. . . . Amateur Radio ka9snf@wb7nnf.#spokn.wa.usa
. USMail 6006-B Eaker, Fairchild, WA 99011

Date: 8 Jun 93 17:18:35 GMT
From: olivea!isc-br!tau-ceti!comtch!opus-ovh!bmork@decwrl.dec.com
Subject: MiniSport Laptop Hacker - Vol 6
To: packet-radio@ucsd.edu

SB HACK@ALLUS
MiniSport Hacker - Vol 6B
MiniSport Laptop Hacker - Vol 6B
8 Feb 93

Thanks to KA9SWW, N8LUF, KA9CAP, N7FTM, N8NUY, WJ8T, and N9KRS for sending me information (I don't know it all) or queries (I know what people are interested in). Special thanks to WB7NNF (my home BBS) for taking care of the inbound mail while I was out of town!

>>> CULTURE

Boy, is it great to be back! Even with all the trouble we have as a country, I am again convinced there is none better. Be glad you live here! My trip to Saudi Arabia was educational. I got to refuel the F117 Stealth Fighters pre- and post-strike on the January raids and got to see real capital punishment in action. The Saudis execute criminals in the downtown square by kneeling them down and slicing their heads off with a huge sword. That is something that I needed to witness only once.

>>> ADMINISTRATIVE

MLH Volume 6A was notice saying that I would be gone for a couple of

months. Volume 6B resumes the normal style, and from here they will continue to be numbered sequentially.

I've received a number of requests to provide back issues of ML Hacker. I don't want to inappropriately burden the packet networks, so I've hesitated sending back issues to everyone that asks. I could see this getting out of hand when somebody sees Volume 23 and asks me to send the preceeding 22! Pending recommendations from my local host sysop, I'll go with the following policy. If you're a sysop (your callsign is the first in the message routing), I'll send back issues through packet so you can post them to be downloaded locally. For other individuals, I've got three options. I'll 1) send them to you on disk through the mail or, 2) via packet to your host sysop if he/she asks, or 3) over landline Internet. If you use the disk method, send me a disk and postage to get it back to you. My address is Brian Mork, 6006-B Eaker, Fairchild, WA 99011. I moved in fall '92, so older callbook addresses are now obsolete. If you use the Internet method, query me via ka9snf@visual.spk.wa.

>>> ACQUIRING YOUR OWN

I started the MLH series as a forum for owners. This was an incomplete goal. A number of folks are reading the series to determine *if* they should buy one! The general concensus is that the ML is serving a lot of people well. The pros are definitely out weighing the cons.

My 2Mb ML accompanied me to Saudi Arabia and survived 2 months of being banged around in a soft case briefcase. I provide some cosmetic barrier by putting it inside of a lawyer legal size fanfold folder. I carry extra disks (2" and standard sizes), null modem cable, male/female cable converters, power supply, and parallel printer cable. This has to be the essence of the laptop. With a "software" TNC and small handheld, you can't have much more of a portable packet station.

In September, I made an 18-hour non-stop car trip from Merced, CA to Spokane, WA. I had a PK232, an FT-290, and the MiniSport on the passenger seat. Boy did I have fun! I used a 5/8 wave whip on top of the car and had range enough to log onto several BBSs while passing through. It was a bizarre feeling to be linked into the amateur networks while travelling down the road. That day, the Shuttle happened to have just launched into orbit and I listened to status updates on local 2M repeaters. When I got into Oregon, word was out that they were up on packet. I tuned up my mobile system and listened. I heard two orbits overhead, although the signal was too weak to copy. With planning, you could do mobile packet into outer space. What technology we have at our finger-tips!!

By far the biggest problem with the Minisport is with power supplies. The Li batteries cause a lot of grief. Weak or dead batteries have caused serial ports to fail and have caused AC power supply output problems. If you have mysterious problems, pull both the NiCad and the Li batteries for sev-

eral hours. Buy new Li batteries (RS 23-166) and fully charge the NiCads.

.
Prices are between the buyer and the seller. For guidance, I'll throw out a few numbers. I was fortunate to buy my MLs from a primary source. Working computers were \$50 or \$100 (1 or 2Mb). Non-working were \$30 or \$75. Power supplies were \$30. No docs. No guarantee. No returns. Cheap, but harsh! I spent an entire Saturday (5:30am to 9:30pm) driving to Benton Harbor, MI and back home. In following weeks, car loads of people were dropping in on Surplus Trading Corp. I've been informed they have no more.

.
A secondary level of surplus dealers is offering them in the \$200 range with a 90-day warrantee. One of the first dealers in Michigan to sell them at hamfests was selling them for \$100 or \$200 with no power supply. They were dumped on the surplus market in Michigan and seem to be most plentiful in the Midwest. Current prices hover around \$150 to \$200. The 2" floppy disks are expensive: minimum \$4 before postage, etc. Try Rex Television (Worth, IL, 708-448-5558) or R&R Computers (Bellbrook, OH, 513-848-4681).

>>> SIMPLE HELPFUL INFORMATION

Your contributions to the MLHacker don't have to be complicated or technically superior. I knew that CTRL-ALT-DEL would reboot the system and allow access to SETUP if the ESC key was pressed. I now know that CTRL-ALT-INS will bring up the Zenith monitor (pre-boot) program without having to pounce on the ESC key. Little things like this help those of us without manuals.

.
Does anybody have a Tech Ref Manual (Zenith part 595-4354)? How much did it cost? Several people have indicated they have other manuals. Is it ok to pass your name onto others so they can contact you?

.
I will transfer information from/to the 2" disks for people if you make it a no-cost operation for me. Send me the necessary disks & return mailer/postage, etc.

.
If you let the NiCad batteries drain, your Lithium batteries will be drained in a very short time. Use the NiCads until you get the red light blink & beep, then charge it up all the way! From experience, I know that 2 months of inactivity will drain the NiCads and the Lithium batteries.

>>> UPCOMING

COMM & PARALLEL LINKS, SHRINKING YOUR FAVORITE SOFTWARE, MINIMUM BOOT FILES, BOARD REVISIONS, and more DISASSEMBLY and PINOUTS.

..
73, Brian, ka9snf@wb7nnf.#spokn.wa or Internet ka9snf@visual.spk.wa

Brian Mork Internet bmork@opus-ovh.spk.wa.us

.. . . Amateur Radio ka9snf@wb7nnf.#spokn.wa.usa

. . . USMail 6006-B Eaker, Fairchild, WA 99011

Date: 8 Jun 93 17:17:32 GMT
From: hal.com!olivea!isc-br!tau-ceti!comtch!opus-ovh!bmork@decwrl.dec.com
Subject: MiniSport Laptop Hacker - Vol 6A
To: packet-radio@ucsd.edu

MiniSport Laptop Hacker - Vol 6A

14 Dec 92

You folks have been great! The incoming information is cascading. I am anxious to assemble some of the ideas and send the next volume out. Everything from using kids' foam blocks for briefcase padding to add-on jumper mods to the back of the circuit board. I have all the back volumes available to copy onto disk, too. I've had several inquiries. Send me a disk (3" or 5") and I'll get it back to you. Please include a SASE to keep this low-cost for me.

The unexpected news, however, is related to my real job. I fly for the Air Force and I'll be departing tomorrow for you-can-guess-where. The plan is to be back the first week in February. That's why this issue is manually typed in as 6A. 6B will be the "real" Volume 6 by the time I get back.

Not the least of folks to thank is Chuck, WB7NNF, who hosts me as my home BBS. I just was reminded that he has been manually forwarding my ALLUSA bulletins. I think his outbound links are running automatically again, but you sure might send him (or your own home BBS sysop) a thank-you for the custom work.

73, Brian, ka9snf@wb7nnf.#spokn.wa.usa or Internet ka9snf.spk.wa.us

Brian Mork Internet bmork@opus-ovh.spk.wa.us
. Amateur Radio ka9snf@wb7nnf.#spokn.wa.usa
. USMail 6006-B Eaker, Fairchild, WA 99011

Date: Tue, 8 Jun 1993 19:17:00 GMT
From: emba-news.uvm.edu!newton.emba.uvm.edu!pallack@uunet.uu.net
Subject: Packet HIGH SPEED HELP!
To: packet-radio@ucsd.edu

Date: Wed, 9 Jun 1993 04:35:02 GMT
From: dog.ee.lbl.gov!overload.lbl.gov!agate!usenet.ins.cwru.edu!gatech!kd4nc!
n4tii@network.UCSD.EDU
Subject: PK-232 DCD open squelch mod wanted
To: packet-radio@ucsd.edu

Hello all you happy people...

I am looking for the DCD open squelch mod for the PK-232.

One, does the mod exist? Two, is it real hard to install?

Thanks....

John Reed, N4TII

n4tii%kd4nc.uucp@gatech.edu
John Reed

Date: Wed, 9 Jun 1993 00:40:06 GMT
From: munnari.oz.au!metro!usage!sserve!csadfa.cs.adfa.oz.au!wkt@network.UCSD.EDU
Subject: Soundblaster as modem?
To: packet-radio@ucsd.edu

At a packet meeting last night, an amateur suggested writing an AX.25 packet driver for a soundblaster card to do 1200, 4800 and/or 9600 baud. This sounds like an excellent idea: no TNC, no modem, just plug the rig into the soundblaster.

Has anybody thought of this before? Is it plausible? etc etc.

Cheers,
Warren vk1xwt

Date: 9 Jun 93 04:37:47 GMT
From: munnari.oz.au!metro!mippet.ci.com.au!eram!dave@network.UCSD.EDU
Subject: Soundblaster as modem?
To: packet-radio@ucsd.edu

In article <1993Jun9.004006.23944@sserve.cc.adfa.oz.au>,
wkt@csadfa.cs.adfa.oz.au (Warren Toomey) writes:

[Description deleted]

| Has anybody thought of this before? Is it plausible? etc etc.

How much control do you have over the phase? And 4800 and above is not exactly audio modulation anyway...

--

Dave Horsfall (VK2KFU) VK2KFU @ VK2RWI.NSW.AUS.OC PGP 2.2
dave@esi.COM.AU ...munnari!esi.COM.AU!dave available

Date: Wed, 9 Jun 1993 06:35:54 GMT
From: munnari.oz.au!newshost.anu.edu.au!sserve!cserve.cs.adfa.oz.au!
wkt@tcgould.tn.cornell.edu
Subject: Soundblaster as modem?
To: packet-radio@ucsd.edu

|> | Has anybody thought of this before? Is it plausible? etc etc.
|>
|> How much control do you have over the phase? And 4800 and above is
|> not exactly audio modulation anyway...

In the sense that there is a DC component. I've got no idea what's the DSP chip on the card, vague memories of a TMS DSP chip. Maurie Daly VK1MD came up with the idea. He's now after C libraries to access the DSP chip on the card.

Waren vk1xwt

Date: 9 Jun 93 09:59:09 GMT
From: dog.ee.lbl.gov!overload.lbl.gov!agate!howland.reston.ans.net!
europa.eng.gtefsd.com!emory!logicse!psgrain!ee.und.ac.za!hippo.ru.ac.za!ucthpx!
comgate.ee.uct.ac.za!not-for-mail@network.
Subject: test
To: packet-radio@ucsd.edu

test.

Date: (null)
From: (null)
Was speaking to a rep for ARRL and they said the FCC is considering setting up larger band with area just for HighSpeed TNC's. But it would be in freq range limiting distance. But not exactly sure...

can anyone fill this in?

--

Internet: pallack@wsyd.com

FidoNet: 1:325/101.0

CompuServe: 72636,2123

Data/BBS: 802-453-6074 (1200-9600 HST DS)

James Pallack, N1PEC

P.O. Box 5035

Burlington, VT 05402-5035

Voice: 802-453-6073

End of Packet-Radio Digest V93 #160
